

SATISH SCIENCE ACADEMY

DHANORI PUNE-411015

LIFE PROCESS

Class 10 - Science

Time All	owed: 2 hours and 58 minutes	Maximum Marks:	167
	Sec	tion A	
1.	The process in which transport of soluble products of	photosynthesis takes place in plants is known as:	[1]
	a) Translocation	b) Conduction	
	c) Evaporation	d) Transpiration	
2.	Which is the first step of photosynthesis?		[1]
	a) Formation of ATP	b) Excitation of electron of chlorophyll	
	c) Ionization of water	d) Attachment of CO_2 to 5 - carbon sugar	
3.	Given below are the events of photosynthesis. Identify correct option.i. Absorption of light energy by chlorophyll.	y which of the following is/are not true and select the	[1]
	ii. The assimilatory power in the form of NADPH an	d ATP are produced during dark phase.	
	iii. Reduction of carbon dioxide to carbohydrates.		
	iv. Conversion of chemical energy to radiant energy a	and splitting of water molecules into hydrogen and oxygen.	
	a) (ii) and (iv) only	b) (i) and (ii) only	
	c) (ii) only	d) (ii) and (iii) only	
4.	Refer to the given figure of heart and select the correct	t statement.	[1]
	a) Q receives deoxygenated blood from Y.	b) Y receives blood from lungs.	
	c) The blood from Y reaches lungs.	d) The blood from body enters heart through P.	
5.	To prepare a good temporary mount of the petunia lea peel from the	f peel showing many stomata, the student has to get the	[1]
	a) lower surface of the leaf	b) tip of the leaf	
	c) point of attachment of the leaf to its petiole.	d) upper surface of the leaf	

6.	The opening and closing of the stomatal pore depend	ls upon	[1]
	a) Oxygen	b) Water in guard cells	
	c) Concentration of CO ₂ in stomatal	d) Temperature	
7.	During contraction of heart, what prevents back flow	v of blood?	[1]
	a) Valves in heart	b) Thin walls of atria	
	c) Thick muscular walls of ventricles	d) All of the these	
8.	What is correct about human kidney?		[1]
	a) Each kidney has 2 ureters	b) It is cylindrical	
	c) It has 100 nephrons	d) It is bean shaped	
9.	Before setting up an experiment to show that seeds r be	elease carbon dioxide during respiration, the seeds should	[1]
10	c) soaked in vinegar	d) dried completely	[1]
10.	which of the following enzyme helps in breaking su	crose into glucose and fructose?	[1]
	a) Invertase	b) Diastase	
	c) Zymase	d) Maltase	
11.	How does a gaseous exchange take place in woody p	olants?	[1]
	a) Epidermal cells	b) Stem hair	
	c) Lenticels	d) Root hair	
12.	Sita is supposed to face an interview. During the firs	t five minutes before the interview she experiences	[1]
	sweating, increased rate of heartbeat, increased respi	ratory rate, etc. Which of the following hormones has	
	a) Estra sur		
	a) Estrogen	b) GRRH	
10	c) Insulin	d) Adrenaline	[4]
13.	pancreatic juice?	gested by an enzyme which is present in saliva as well as in	[1]
	a) Minerals	b) Proteins	
	c) Carbohydrates	d) Fats	
14.	In the experiment, to show CO_2 is given out during r	respiration. Atul put boil gram seeds in a conical flask.	[1]
	According to his observation, the water level in the b	pent tube:	
	a) Rises	b) Decreases	
	c) Rise or decreases in water level depends on the room temperature	d) Remains the same	
15.	What are the end products of fat digestion?		[1]
	a) Amino acid, fatty acid	b) Glycerol, amino acid	

	c) Glucose, amino acid	d) Fatty acid, glycerol		
16.	The process in which loss of water in the form of van helps in Y. Here X and Y respectively are:	pours from the aerial parts of plants takes place is X, which	[1]	
	a) translocation and movement of soluble products of photosynthesis in phloem.	b) transpiration and temperature regulation.		
	c) translocation and absorption of water and minerals from soil by roots.	d) transpiration and photosynthesis.		
17.	After completing the experiment three students A, B and C found that the percentage of absorption of water is			
	10%, 20% and 25% respectively. Who had put raisins more time in the water?			
	a) C	b) A and C		
	c) B	d) A		
18.	Temporary mount of a leaf peel is prepared in:		[1]	
	a) Dilute glycerine	b) 70% alcohol		
	c) Nail polish	d) Canada Balsam		
19.	Which liquid did a student use for putting a drop on	the slide before placing the coverslip while preparing a	[1]	
	temporary mount of leaf epidermal peel?			
	a) Water	b) Iodine		
	c) Glycerine	d) Safranin		
20.	In the experiment to show that carbon dioxide is released during respiration the small test tube of KOH solution [1			
	is suspended inside the conical flask to absorb the:	· · · · · · · · · · · · · · · · · · ·		
	a) Oxygen of the flask.	b) Moisture of the flask.		
	c) Air of the flask.	d) Carbon dioxide of the flask released by the seeds.		
21.	Assertion (A): The movement of water and dissolve	d salts in xylem is always upwards.	[1]	
	Reason (R): The upward movement of water is due	to low pressure created by transpiration.		
	a) Both A and R are true and R is the correct explanation of A.	b) Both A and R are true but R is not the correct explanation of A.		
	c) A is true but R is false.	d) A is false but R is true.		
22.	Assertion (A) : Doctors can tell by counting the puls	se rate and listening to heartbeats whether a person is well or	[1]	
	not			
	Reason (R) : Pulse rate and heart beats change acco	rding to the condition of our heart.		
	a) Both A and R are true and R is the correct explanation of A.	b) Both A and R are true but R is not the correct explanation of A.		
	c) A is true but R is false.	d) A is false but R is true.		
23.	Assertion (A): Excretion is the biological process by	y which harmful wastes are removed from an organism's	[1]	
	body.			
	Reason (R): The mode of excretion is completely th	e same in both unicellular and multicellular organisms.		

	a) Both A and R are true and R is the correct explanation of A.	b) Both A and R are true but R is not the correct explanation of A.	
	c) A is true but R is false.	d) A is false but R is true.	
24.	Assertion (A): Bile is essential for the digestion of lipids.		
	Reason (R): Bile juice contains enzymes.		
	a) Both A and R are true and R is correct explanation of the assertion.	b) Both A and R are true but R is not the correct explanation of the assertion	
	c) A is true but R is false.	d) A is false but R is true.	
25.	Assertion (A) : The rate of photosynthesis will be low	vered if the leaves are coated with oil.	[1]
	Reason (R) : Stomata get's blocked and thus gaseous	exchange is affected.	
	a) Both A and R are true and R is the correct explanation of A.	b) Both A and R are true but R is not the correct explanation of A.	
	c) A is true but R is false.	d) A is false but R is true.	
26.	Assertion (A): In woody plants, gaseous exchange or	curs through lenticels.	[1]
20.	Reason (R): Lenticels are specialised cells found alon	g with stomata on the stem of woody plants.	[-]
	a) Both A and R are true and R is the correct \mathbf{A}	b) Both A and R are true but R is not the	
	explanation of A.	correct explanation of A.	
	c) A is true but R is false.	d) A is false but R is true.	
27.	Explain balanced diet.		[1]
28.	Write two different ways in which glucose is oxidised	to provide energy in human body. Write the products	[1]
	formed in each case.		
29.	Write the other name given to lymph. State its two fur	actions.	[1]
30.	What are the end products of photosynthesis?		[1]
31.	Which carbohydrate serves as roughage in our body?	Y	[1]
32.	One molecule of glucose is broken down into which 3	-carbon molecules?	[1]
33.	Give at least one function of stomata in plants?		[1]
34.	Name the blood vessel which brings blood to the kidn	eys. Why is nephron called a basic filtration unit of	[1]
	kidney? Write the role of tubular part of nephron in ur	ine formation.	
35.	What is the main source of energy in the body?		[1]
36.	What is the first visible product of photosynthesis in the	he leaves?	[1]
	Sec	tion B	
37.	Two green plants are kept separately in oxygen free co Which one will live longer? Give reasons.	ontainers, one in the dark and the other in contiguous light.	[2]
38.	a. Name the glands present in the walls of the stomac b. Although the liver does not contain any enzyme ye	ch and write the secretions which are released by them. et it plays an important role in digestion. Comment.	[2]
39.	What is meant by clotting of blood? Write a flow char	t showing major events taking place in clotting of blood?	[2]
40.	What are the differences between aerobic and anaerob anaerobic mode of respiration.	ic respiration? Name some organisms that use the	[2]
41.	Why is less energy produced during anaerobic respiration	tion than in aerobic respiration?	[2]
42.	The body temperature of some organisms depends on	the temperature of the environment. Comment.	[2]
		-	-

43.	What would happen if all the green plants disappear from earth?	[2]	
44.	What do you mean by closed type of circulatory system?	[2]	
45.	Give the chemical equation of photosynthesis.	[2]	
46.	State differences between artery, vein and capillary.	[2]	
	Section C		

47. The diagram given below is the experiment set-up of show that carbon dioxide is given out during respiration. In **[3]** this set-up what does test tube marked (A) contain? What are its role in the experiment



- 48. Why the leaf is boiled in alcohol for a few minutes using a water bath in an experiment to show that sunlight is **[3]** necessary for photosynthesis?
- 49. If a plant is releasing carbon dioxide and taking in oxygen during the day, does it mean that there is no photosynthesis occurring? Justify your Answer. [3]
- 50. A figure given below shows a diagram of a kidney and its associated structures. The table list the percentage of [3] certain components found within the structures A and B.



In Structure A			
Components	Concentration %		
Urea	0.03		
Glucose	0.10		
Amino acids	0.05		
Salts	0.75		
Proteins	8.00		
In Structure B			
Components	Concentration %		
Urea	2.00		
Glucose	0.00		
Amino acids	0.00		
Salts	1.50		

i. Using only the information given in the tables, deduce the functions of the kidney.

ii. Explain how the proportions of components present in part B would change if a person is suffering from diabetes mellitus.

- 51. Food does not pass through the digestive system by 'gravity'. This is clear from the fact that we can digest the [3] food even if we are lying down. Explain the logic behind the passage of food through our digestive system.
- 52. A portion of destarched leaf of a potted plant was covered with a black strip of paper. The plant was exposed to **[3]** sunlight for six hours and then tested for starch. What will be the observation?
- 53. Can you, design any other experiment set-up for testing that CO₂ is produced during respiration?
- 54. Leaves of healthy potted plant were coated with vaseline. Will this plant remain healthy for long? Give reasons [3] for your answer.
- 55. In each of the following situations what happens to the rate of photosynthesis?
 - i. Cloudy days
 - ii. No rainfall in the area
 - iii. Good manuring in the area
 - iv. Stomata get blocked due to dust
- 56. Observe the following table carefully and match the components of part I with part II of the table. Write them in **[3]** complete sentences.

	Part I	Part II
Unicellular organism		Transpiration
Human beings		Diffusion
Plants		Urination

- 57. "If there were no algae there would be no fish in the sea." Comment.
- 58. How to destarch the leaves for an experiment to show that sunlight is necessary for photosynthesis?
- 59. Name the following
 - i. The process in plants that links light energy with chemical energy.
 - ii. Organisms that can prepare their own food.
 - iii. The cell organelle where photosynthesis occurs.
 - iv. Cells that surround a stomatal pore.
 - v. Organisms that cannot prepare their own food.
 - vi. An enzyme secreted from gastric glands in the stomach that act on proteins.
- 60. Study the fig (a) and (b). What difference you observe in the figure (b)? Give a justified reason for your answer. [3]



- 61. During respiration in an organism A, one molecule of glucose produces 2 ATP molecules whereas in respiration [3] of another organism B, one molecule of glucose produces 38 ATP molecules.
 - i. Which organism is undergoing aerobic respiration?
 - ii. Which organism is undergoing anaerobic respiration?
 - iii. Which type of organism A or B can convert glucose into alcohol?
 - iv. Name one organism which behaves like A.
 - v. Name one organism which behaves like B.

Section D

[3]

[3]

[3]

[3]

[3]

62. Read the following text carefully and answer the questions that follow:

Kidneys are vital organs for survival. Several factors like infections, injury or restricted blood flow to kidneys reduce the activity of kidneys. This leads to accumulation of poisonous wastes in the body, which can even lead to death. In case of kidney failure, an artificial kidney can be used. An artificial kidney is a device to remove waste products from the blood through dialysis.

- a. i. Name the artery that brings oxygenated blood to the kidney.
 - ii. Name the cluster the thin-walled blood capillaries present in the Bowman's capsule. (1)
- b. In human excretory system name the organ which stores urine. Is this organ under hormonal control or nervous control? (1)
- c. List two major steps involved in the formation of urine and state in brief their functions. (2)

OR

In which part of the nephron does selective reabsorption take place? List the factors which the amount of water reabsorbed depends on. **(2)**

63. Read the following text carefully and answer the questions that follow:

Human digestive system is a tube running from mouth to anus. Its main function is to breakdown complex molecules present in the food which cannot be absorbed as such into smaller molecules. These molecules are absorbed across the walls of the tube and the absorbed food reaches each and every cell of the body where it is utilised for obtaining energy.

a. Name the glands present in the buccal cavity and write the components of food on which the secretion of these glands act upon. **(1)**

b. Two organs have a sphincter muscle at their exit. Name them. (1)

What will happen if:

i. mucus is not secreted by the gastric glands.

ii. Villi are absent in the small intestine. (2)

OR

Bile juice does not contain any enzyme, yet it has important roles in digestion. Justify the statement. (2)

64. Read the following text carefully and answer the questions that follow:

Nutrition is the process of taking food by an organism and the utilization of food for energy. This is a vital process that helps living beings obtain their energy from various sources.

Nutrients are substances that provide nutrition.

The mode of nutrition varies from one species to another. Plants do photosynthesis to prepare their own food. Animals depend on plants for food.



- i. What do you understand by nutrition? (1)
- ii. Mention how organisms like bread moulds and mushrooms obtain their food. (1)
- iii. What do you understand by autotrophic nutrition? (2)

[4]

What is common for Cuscuta, ticks, and leeches? (2)

65. **Read the following text carefully and answer the questions that follow:**

The green plants make their food, through photosynthesis and are therefore called autotrophs. All other organisms depend upon green plants for food and are referred to as heterotrophs. Green plants carry out photosynthesis by using light energy of sun. The first phase of reactions are directly light driven therefore called light reactions. The second phase of reactions are not directly light driven but are dependent on the products of light reactions and are called dark reactions.

- i. What is produced during the light phase of photosynthesis? (1)
- ii. How many sugar molecules are produced in the overall process of photosynthesis? (1)
- iii. A plant is provided with ideal conditions for photosynthesis and supplied with isotope ¹⁴CO₂. When the products of the process are analysed carefully, what would be the nature of products? (2)
 OR

What are the accurate functions corresponding to parts X, Y, and Z as depicted in the provided diagrammatic representation of an electron micrograph of a section of a chloroplast? (2)

Section E

66.	What is the difference between an intercellular and intracellular digestion?	[5]
67.	Describe the process of digestion of food in human beings.	[5]
68.	Draw the diagram of the alimentary canal of man and label the following parts.	[5]
	Mouth, Oesophagus, Stomach, Intestine	
69.	Explain the three pathways of breakdown in living organisms.	[5]
70.	i. Describe the structure and function of the basic filtering unit of kidney.	[5]
	ii. List two factors on which reabsorption of water from urine depends?	
71.	Describe the excretory system in human beings.	[5]
72.	Explain nutrition in Amoeba.	[5]
73.	a. Write the reaction that occurs when glucose breaks down anaerobically in yeast.	[5]
	b. Write the mechanism by which fishes breath in water.	
	c. Name the balloon likes structures present in lungs. List its two functions.	
	d. Name the respiratory pigment and write its role in human beings.	
74.	a. Define excretion.	[5]
	b. Name the basic filtration unit present in the kidney.	
	c. Draw excretory system in human beings and label the following organs of excretory system which perform	
	following functions;	
	i. form urine.	
	ii. is a long tube which collects urine from kidney.	
	iii. store urine until it is passed out.	
75.	Design an experiment to demonstrate that carbon dioxide is essential for photosynthesis. Write the observation	[5]

and conclusion of the experiment.